Nonpoint Source Pollution

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LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY
FOR ALL YOUR ENVIRONMENTS

What is Nonpoint Source Pollution? Pollution that does not come from a Point Source, such as a pipe!

Point Source Pollution…

comes from an identified point or location, such as an industrial plant.

Point Source Pollution…

is regulated, which means you must have a permit in order to discharge it.

Nonpoint Source Pollution…

EPA testing Katrina floodwaters

can be water that falls on the ground and moves across the land, picking up pollutants along the way.

This water is called **runoff**.

It may eventually end up in a river, lake, or ocean.

No permits are required.

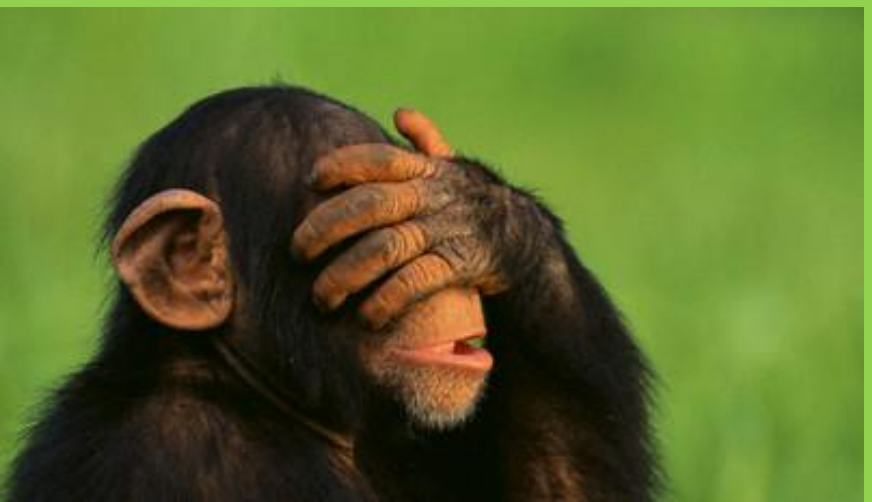

Rain
Yards

Crops

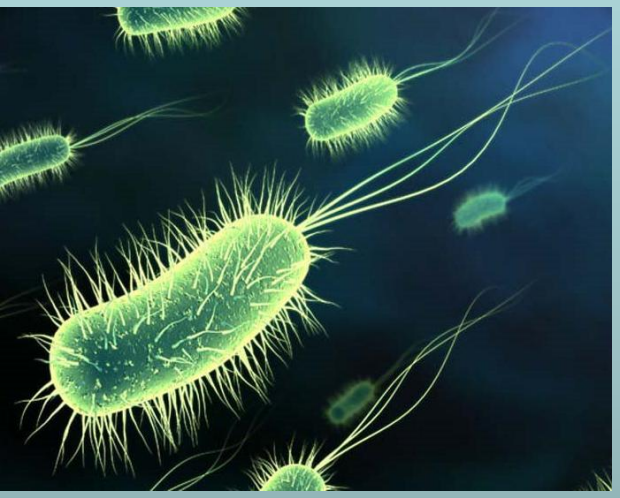
And many other ways water falls on the ground...

Is this point or nonpoint?

Don’t know!



What kind of pollutants are picked up from the ground?



1. Pathogens
2. Nutrients
3. Sediment
4. Toxic substances
5. And many others

Where do these pollutants come from?

Some of the pollutants occur naturally, such as waste from wildlife and types of erosion. There is virtually nothing we can do about this.

The rest is caused by human activities, such as….

Farming

Fields and crops can contribute nutrients, sediment, pesticides, and herbicides.

Livestock

Contribute pathogens and nutrients, and can cause soil erosion.

Urban areas

Can contribute anything that washes off of yards and streets: chemicals, oil, gas, fertilizer, dog poop, soil, roadkill, food, trash …

Harvesting Timber

Logging strips the land of vegetation, causing erosion.

Failing Septic Tanks

Nutrients and pathogens come from malfunctioning septic tanks.

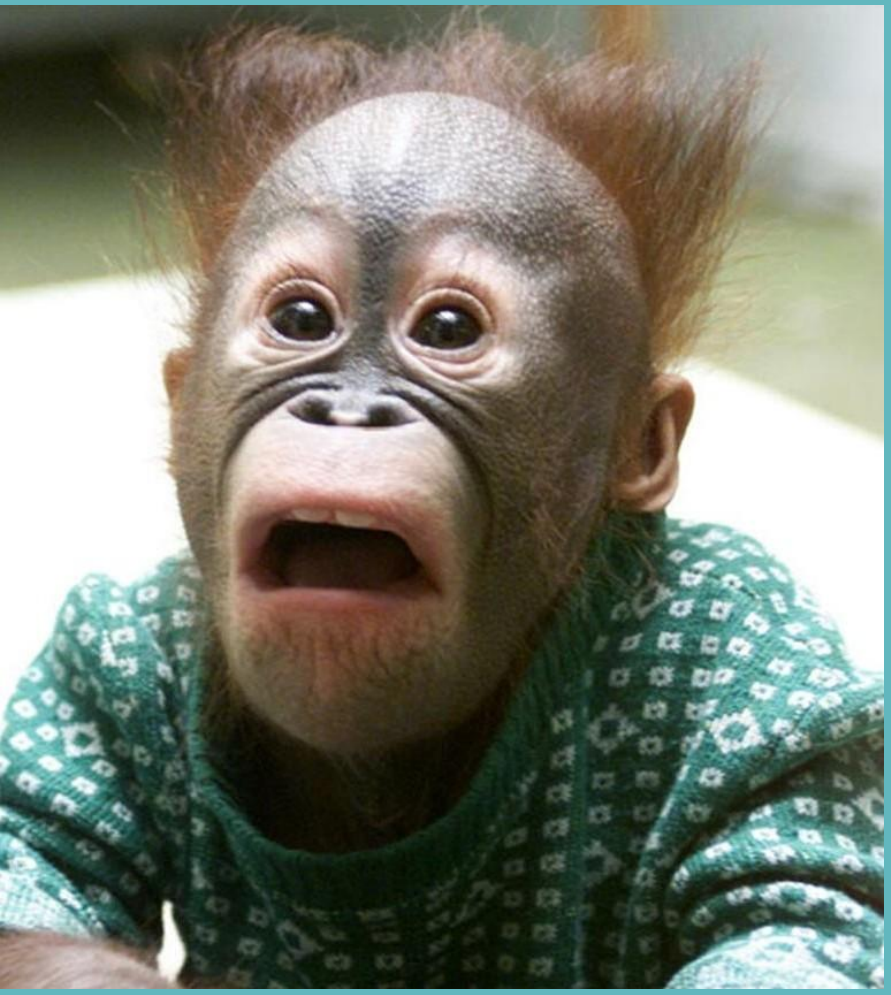
Construction Sites

May contribute sediment, nutrients, metals, construction debris, and other pollutants.

Construction materials and soil may wash into the road during rainfall. This was across the street from DEQ's office!

Did they get in trouble?

Why Worry About It?



Excessive levels of pollutants in water bodies can make them unhealthy and useless!

And we don’t want this to happen again….


In Ohio (1969), the Cuyahoga River was so polluted it caught on fire!

How do you know if it's too polluted?

Water samples are collected and tested for many parameters, such as:

- Dissolved oxygen
- Fecal coliform bacteria
- Phosphorus
- Nitrogen
- Temperature
- Turbidity
- pH…

What do the lab tests tell us?

If the test results do not fall within a certain range, we say that waterbody is *“not meeting its criteria”* and it is *“not supporting its Designated Uses.”*

Types of Designated Uses

Primary Contact Recreation

Secondary Contact Recreation

Fish and Wildlife Propagation

Drinking Water Supply

Oyster Propagation

Agriculture

Outstanding Natural Resource

Primary Contact Recreation

Direct contact with the water, such as swimming and water skiing.

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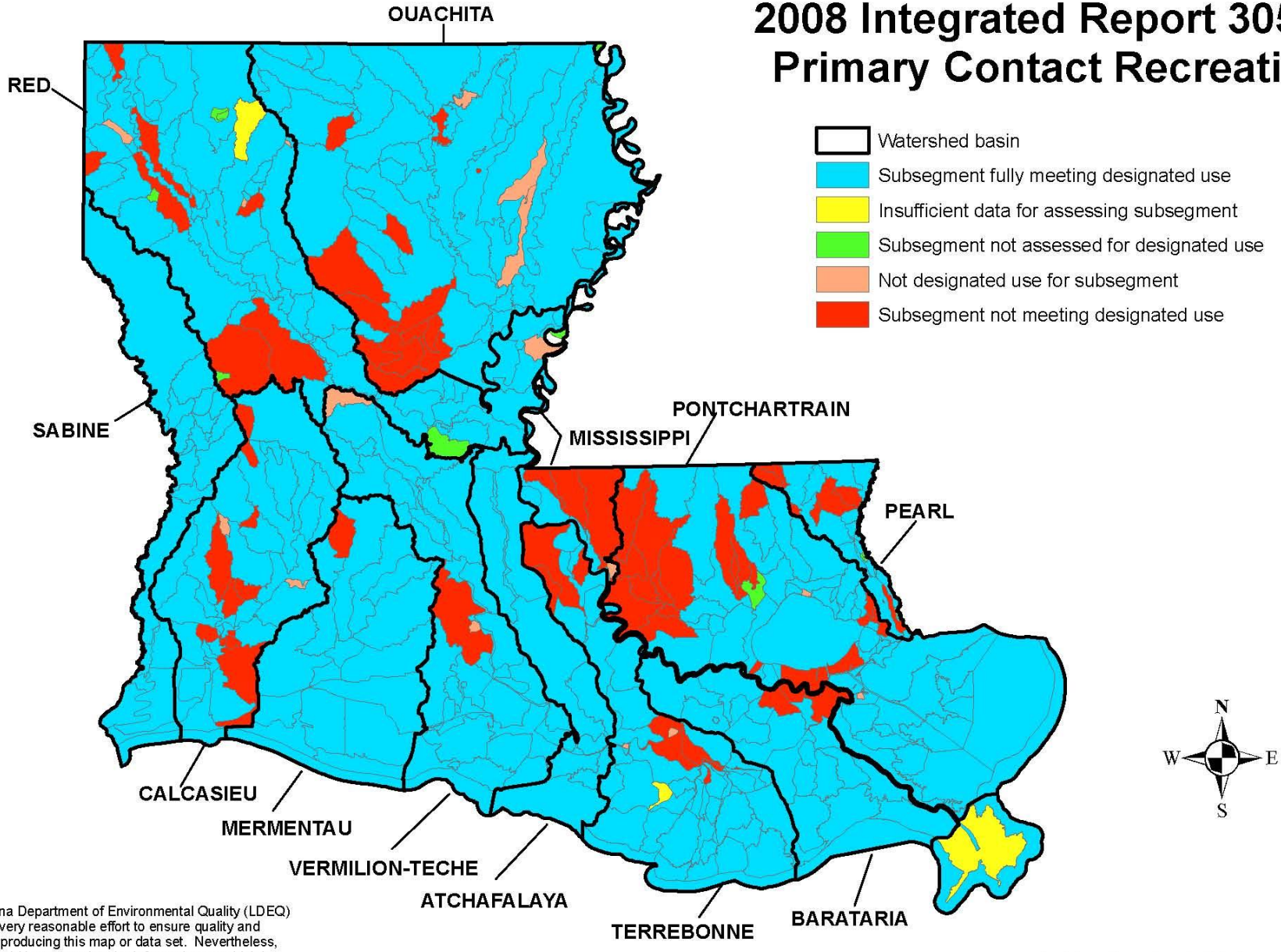
Primary Contact Recreation



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Standards, Assessment and Nonpoint
Map No. 200802038, September 18, 2008
Base Map: 1:100k DLG
Projection: UTM Zone 15, NAD 83

Secondary Contact Recreation

Occasional contact with water, such as: fishing, wading, boating, building sandcastles…

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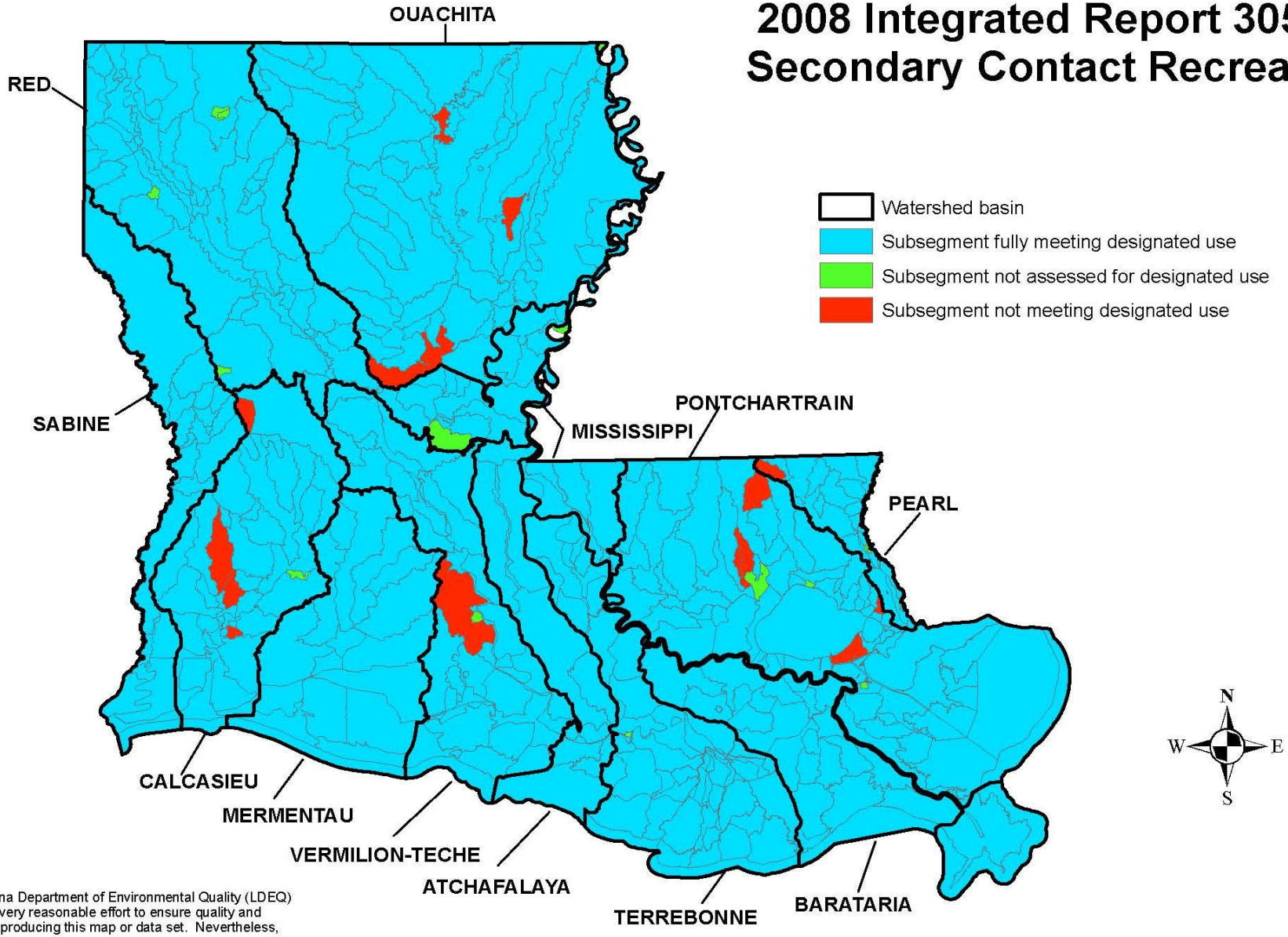
Secondary Contact Recreation



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Map No. 200802039, September 18, 2008
Base Map: 1:100k DLG
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Fish and Wildlife Propagation

Fish and other animals use the water as a place to live, eat, and reproduce.

?


LOUISIANA
SPORTSMAN'S PARADISE


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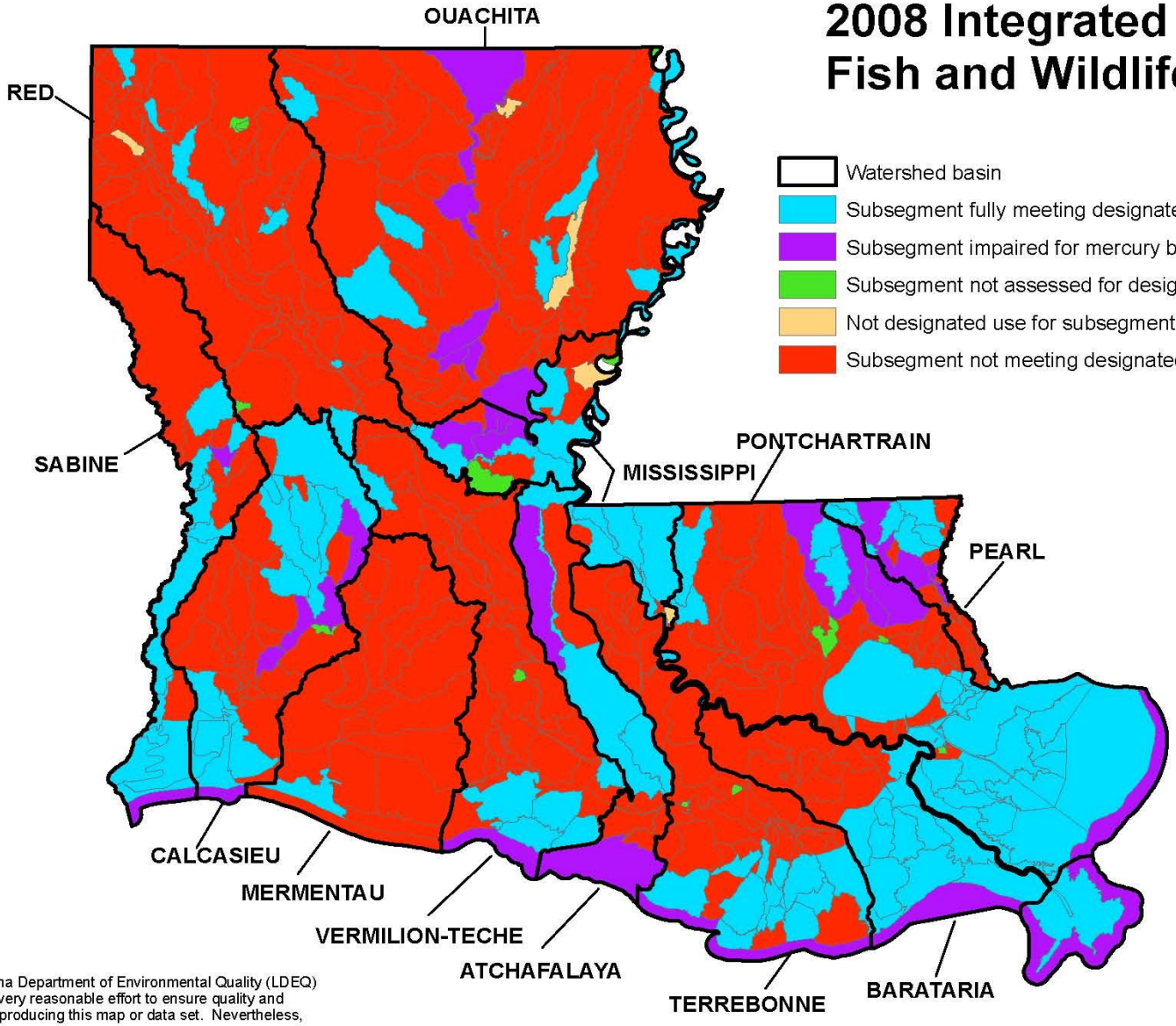
Fish and Wildlife Propagation



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Map No. 200802040a, September 18, 2008
Base Map: 1:100k DLG
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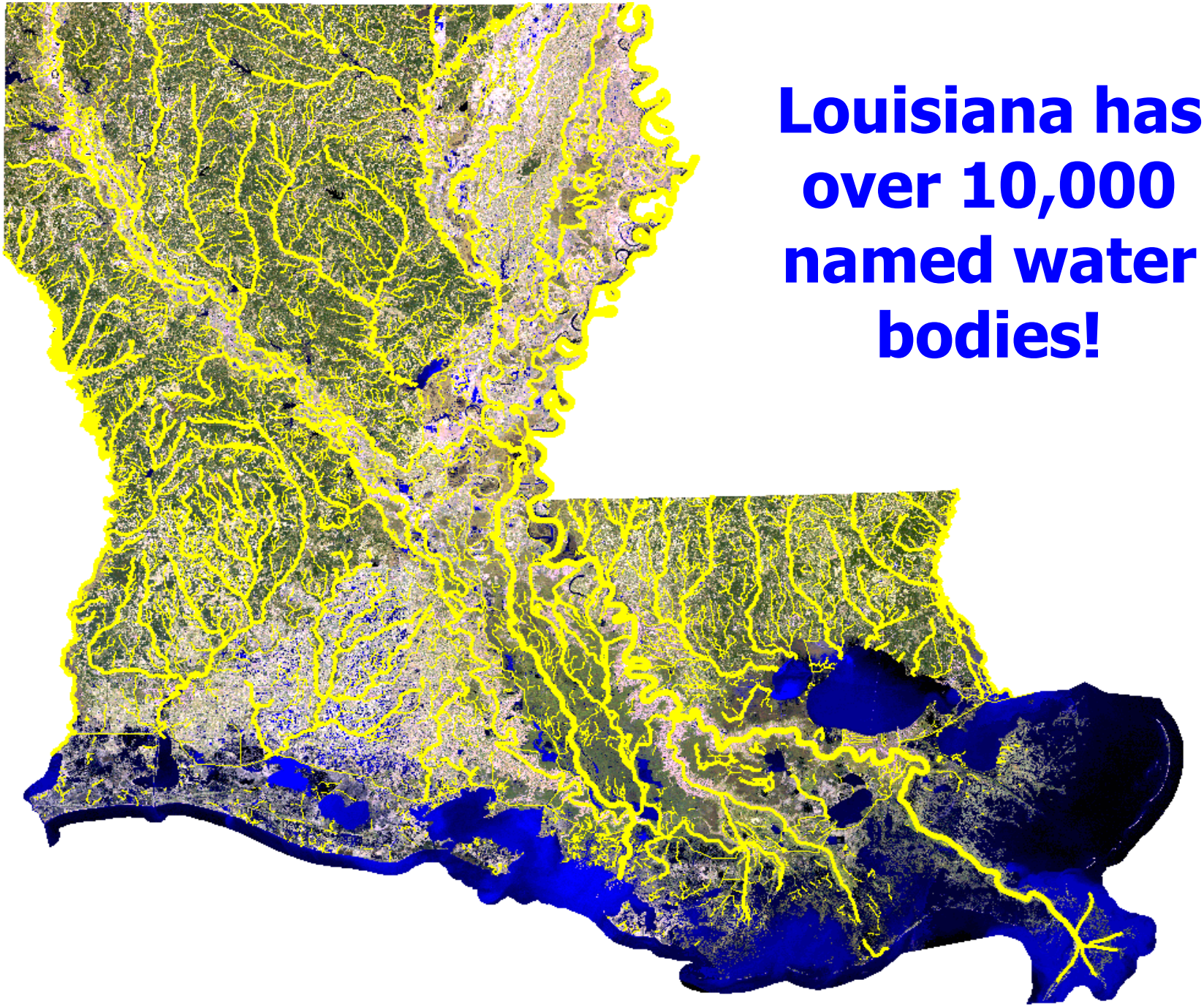
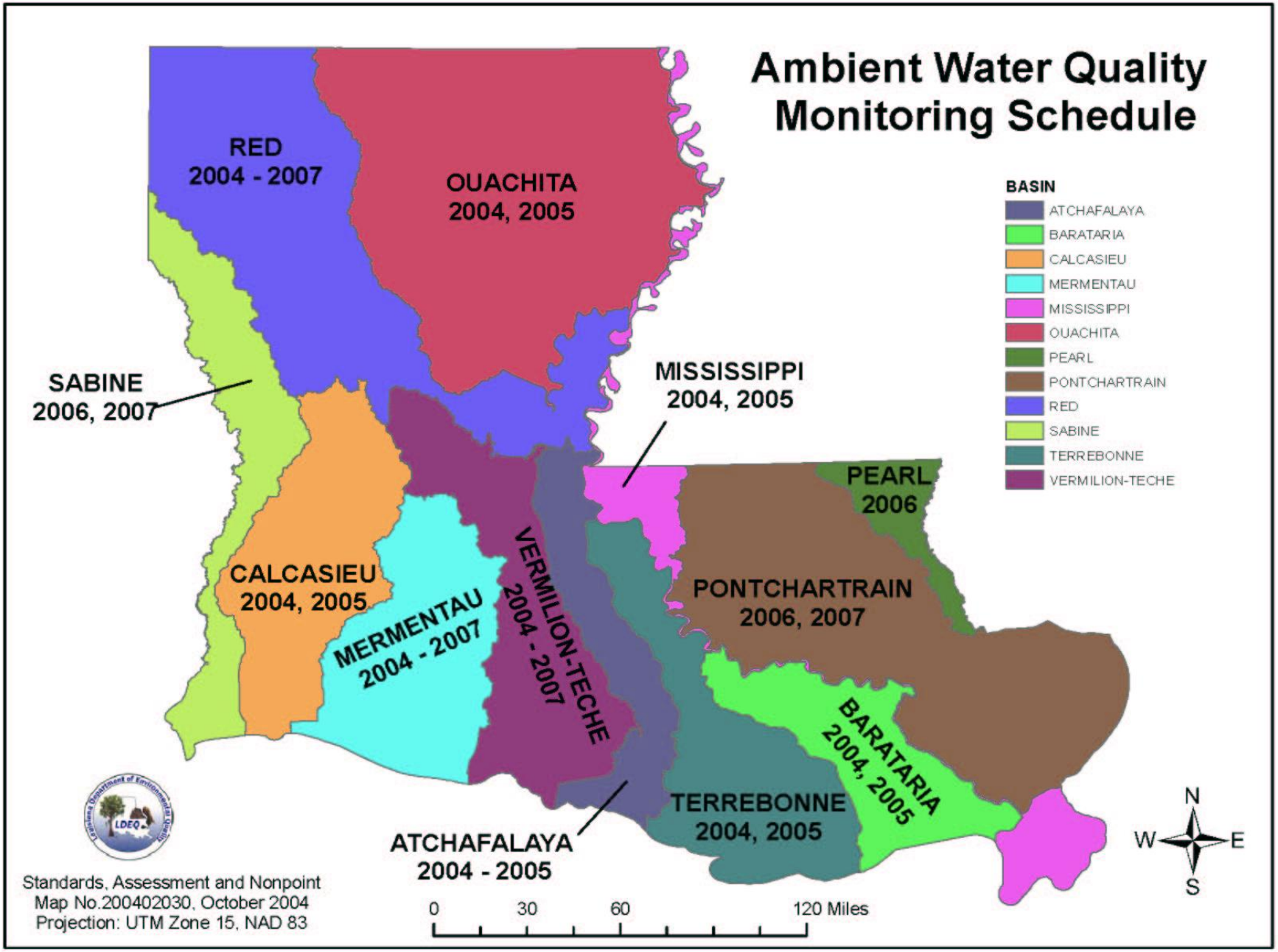


Louisiana has over 10,000 named water bodies!

How do we keep track of all these water bodies and the water samples?

The state is divided into 12 Watershed Basins.

Water samples are collected from specific Basins each year, so that within a 4-year period all Basins will have been sampled.


Ambient Water Quality Monitoring Schedule
RED
2004 - 2007
OUACHITA
2004, 2005
SABINE
2006, 2007
MISSISSIPPI
2004, 2005
PEARL
2006
CALCASIEU
2004, 2005
MERMENTAU
2004 - 2007
VERMILION-TECHE
2004 - 2007
PONTCHARTRAIN
2006, 2007
BARATARIA
2004, 2005
TERREBONNE
2004, 2005
ATCHAFALAYA
2004 - 2005
BASIN
ATCHAFALAYA
BARATARIA
CALCASIEU
MERMENTAU
MISSISSIPPI
OUACHITA
PEARL
PONTCHARTRAIN
RED
SABINE
TERREBONNE
VERMILION-TECHE
N
W
E
S
0
30
60
120 Miles
Standards, Assessment and Nonpoint
Map No.200402030, October 2004
Projection: UTM Zone 15, NAD 83

How do we stop all this pollution?

By using Best Management Practices!

BMPs can reduce the amount of nonpoint pollution that is being carried into the waterbodies.

How can BMPs control nonpoint source pollution?

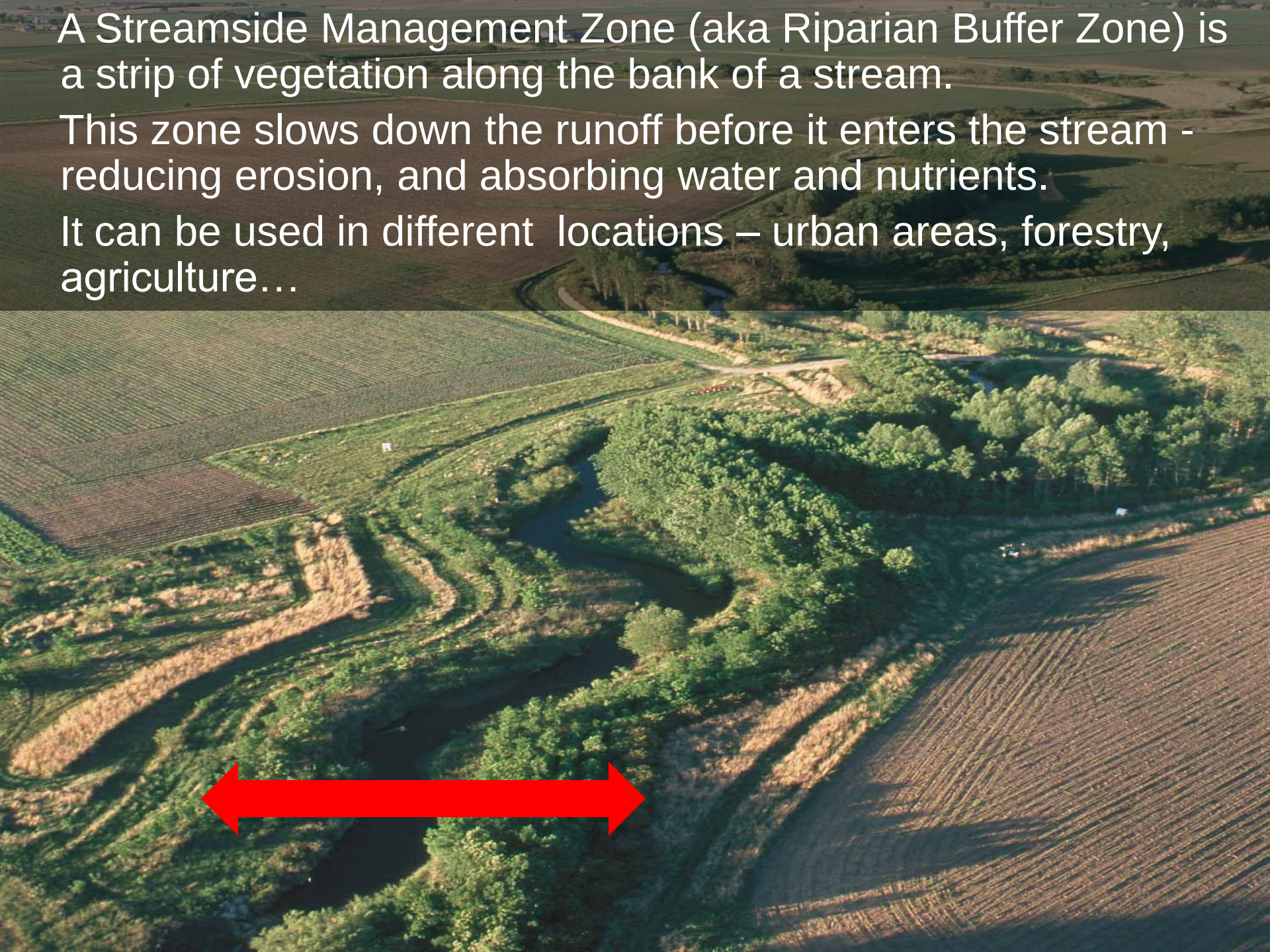
- **Decrease the amount of runoff by retaining stormwater until it evaporates, soaks into the ground, or is absorbed by plants.**

- **Increase the quality of runoff by filtering out pollutants.**

A Streamside Management Zone (aka Riparian Buffer Zone) is a strip of vegetation along the bank of a stream.

This zone slows down the runoff before it enters the stream - reducing erosion, and absorbing water and nutrients.

It can be used in different locations – urban areas, forestry, agriculture…



Urban BMPs

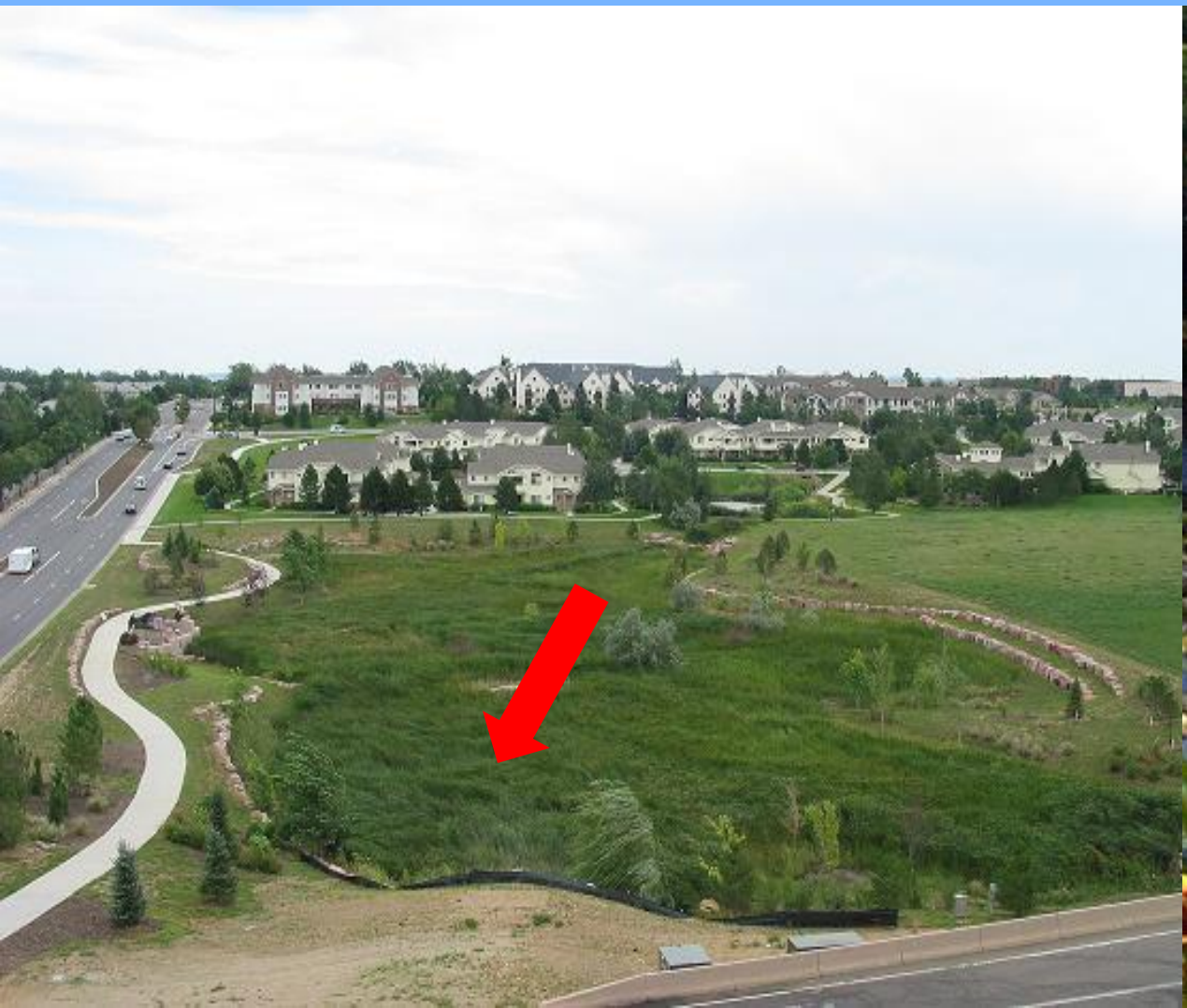
Rain Garden

Rain Barrels - save the rain for a sunny day!

Pervious Pavements

Demonstration of Pervious Concrete

Detention vs. Retention Pond



Urban BMPs

Urban BMPs

If you have a septic tank, make sure it works properly!

Toilet paper from the absence of a septic tank.

Urban BMPs

Use native plants that are drought and disease resistant.

Use fertilizer, pesticides, and herbicide sparingly, or not at all.

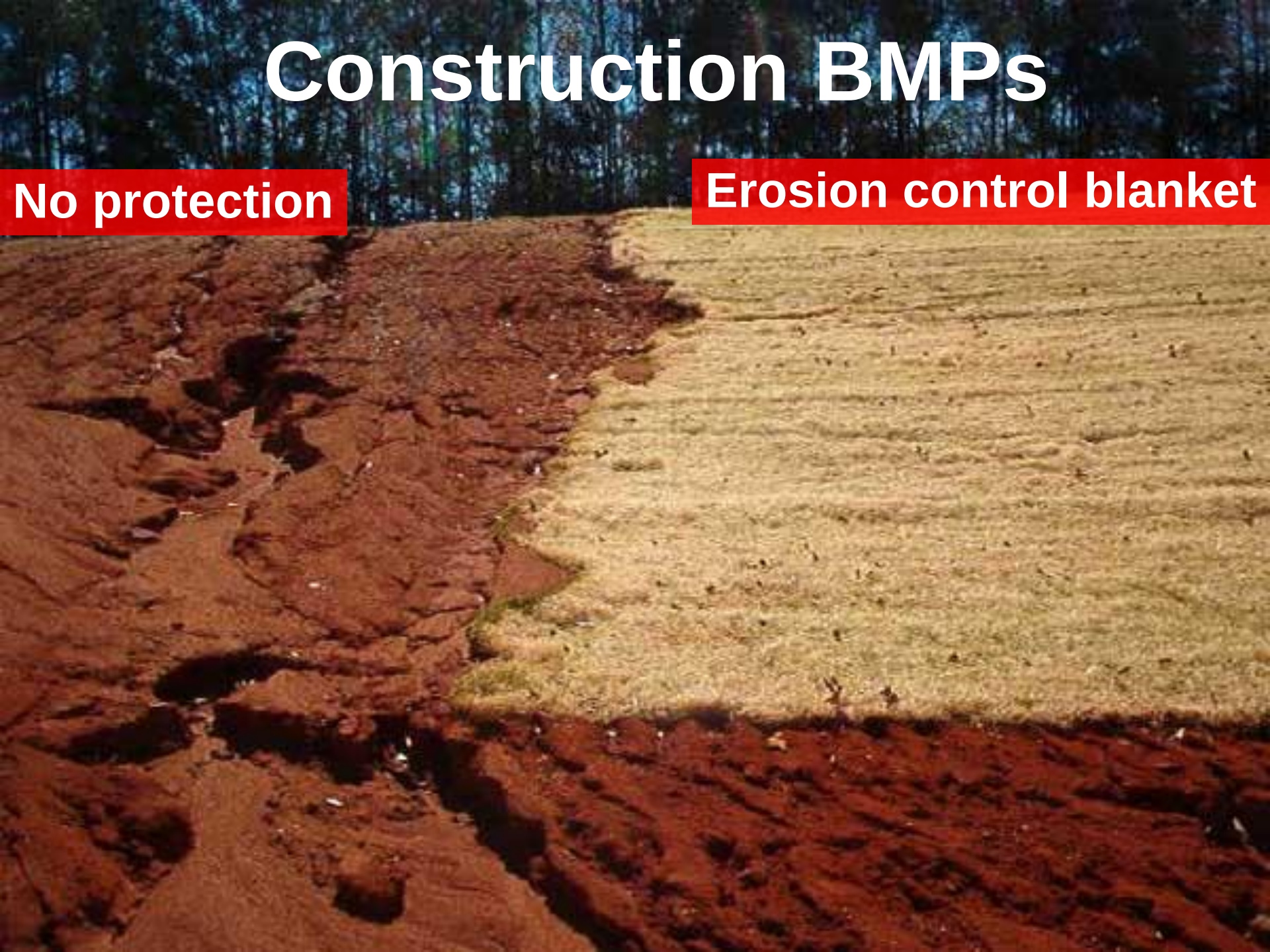
Increase amount of grassy areas.

Don’t spray herbicide in open ditches. Instead, plant native vegetation that doesn’t need mowing.

Construction BMPs

Silt Fence

Construction BMPs



Hydroseeding

Mixture of seeds, mulch and bonding agents prevent erosion while waiting for grass to grow.

Forestry BMPs

Roads should not be built on highly erodible soils or steep slopes.

When roads are no longer needed, they should be closed and revegetated.

Forestry BMPs

Instead of driving across a stream, build a temporary bridge across it. This prevents stream bank erosion.

Controlled Burn

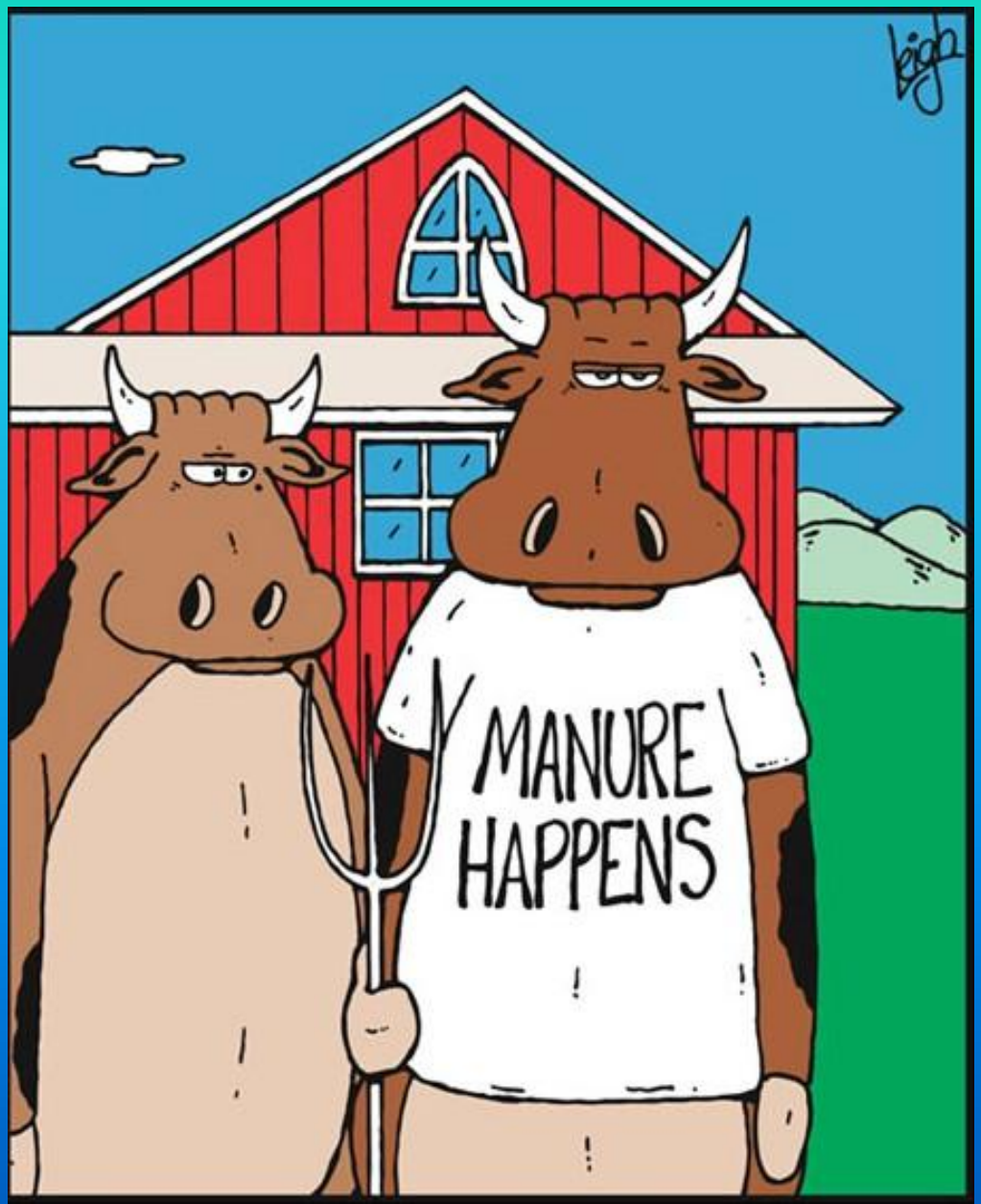
Benefits of burning:

- **Reduce logging debris**
- **Reduce unwanted vegetation**
- **Reduce possibility of wildfire**
- **Improve wildlife habitat**
- **Improve natural seeding**
- **Permits the planting of new trees**

Water Bars

A water bar is a mound built across the road to protect it from erosion. It slows the water flowing down the road and sends the water back into the forest.

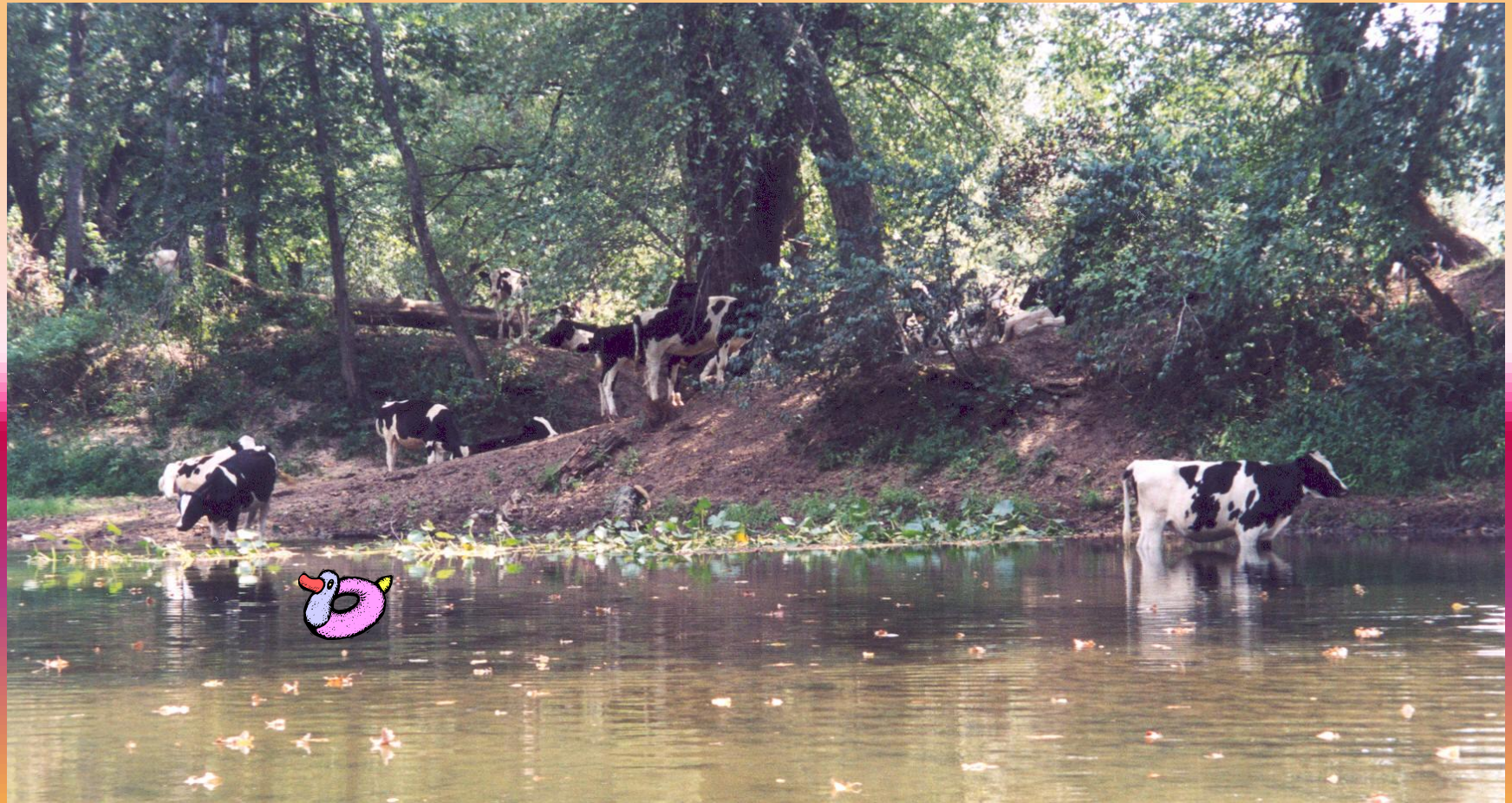
Agricultural BMPs



Fencing

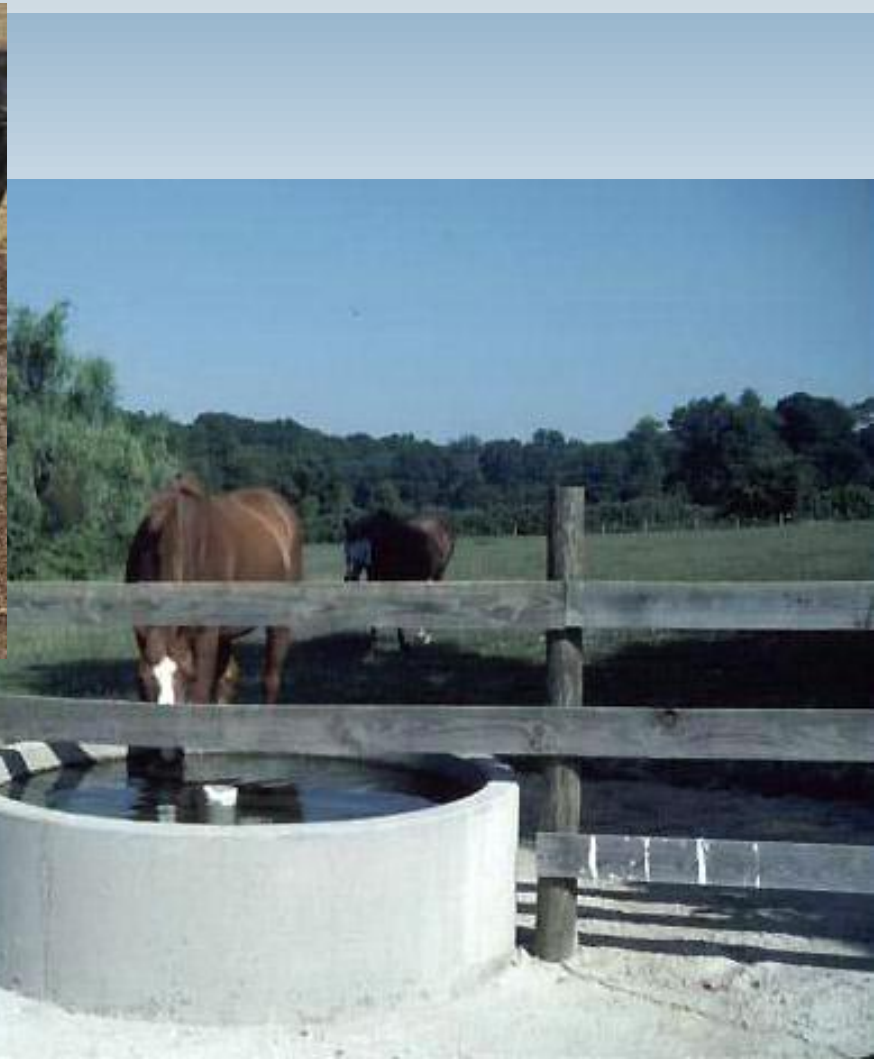
Livestock can cause serious erosion of stream banks, and also deposit fecal matter in the water.

If you fence animals out of the stream, you must provide them with an alternate source of water and shade.



Concrete Water Trough

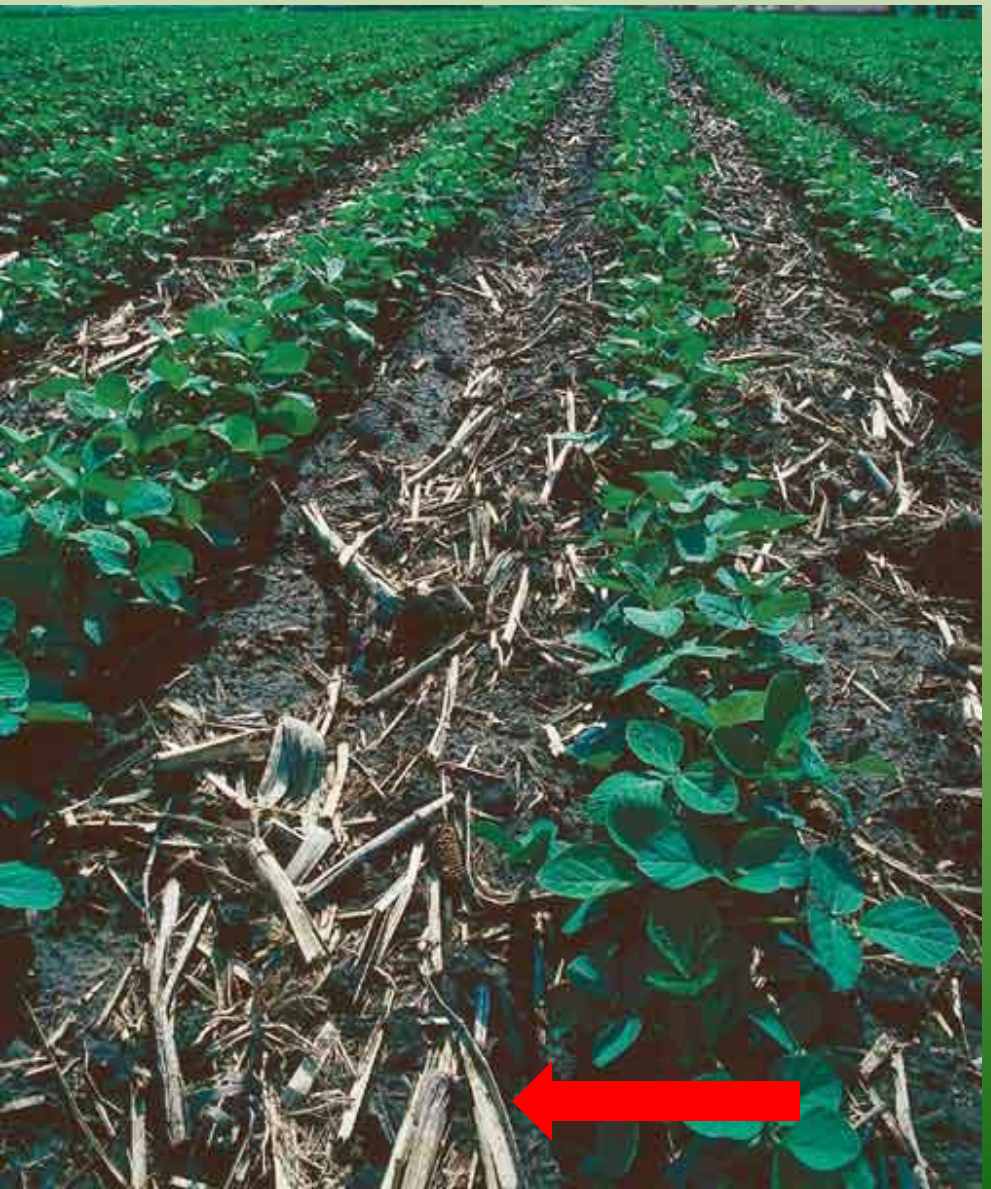
Installing a water trough with a concrete pad will help prevent the surrounding soil from eroding.



Cover Crops

Cover crops grow when fields would otherwise be bare. They reduce the amount of soil and nutrients that are washed away.

Conservation Tillage

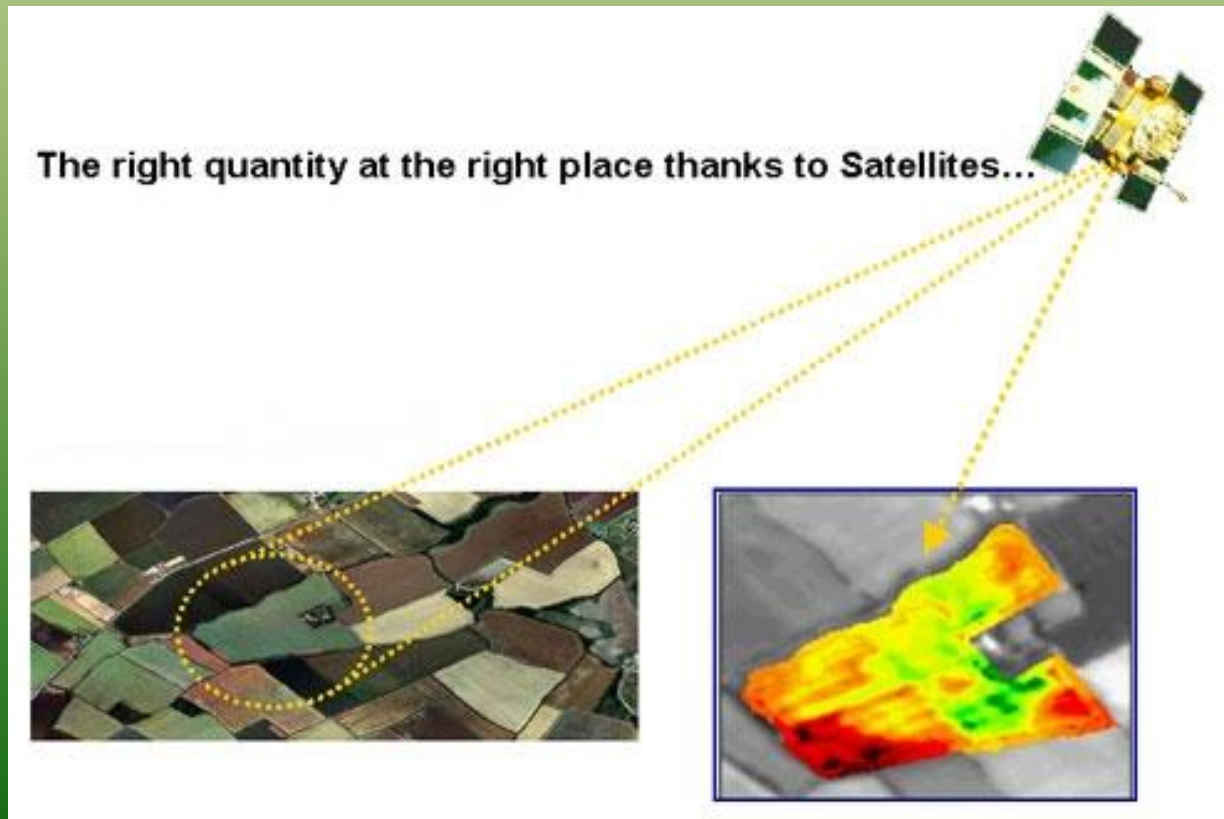


Residue from the previous crop is left on the ground.

New crops are planted with minimum tillage of the soil.

Optical Sensors

Measure the amount of light reflected by plants.
Calculate the amount of fertilizer needed for each plant, instead of one set amount for the entire field.
Less fertilizer is washed into nearby streams and wasted.



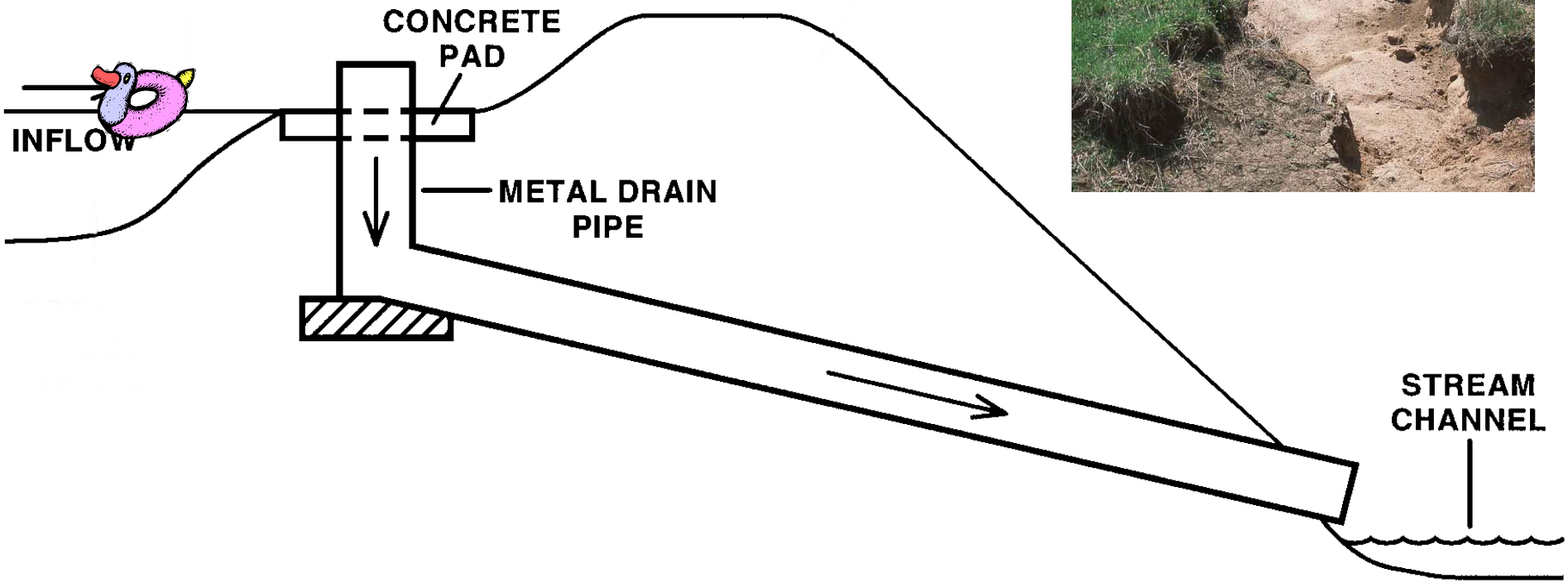
Precision Land Leveling

GPS and/or lasers are used to level a field.

A level field uses less water to keep a minimum amount of water on the field (such as rice).

Pipe Drop Structures

Safely delivers water down a stream bank without causing sheet and rill erosion and deep gullies.



Manure Management

Dairy lagoons are one way to store manure.
The waste can be pumped out of the lagoons and spread across the fields by a powerful applicator…

You can not install a BMP and forget about it.
They all require maintenance!

If they are not properly maintained …

good BMPs can go bad!

Kudzu was planted along banks for erosion control. Now it grows out of control, and can smother everything in its path!


Erosion Blanket Failure

Questions?